BY INYO ELLERSIECK

1978

SCALE 1:250 000 This report is preliminary and has not been edited or reviewed for conformity with Geological Survey CONTOUR INTERVAL 200 FEET DATUM IS MEAN SEA LEVEL BASE BY U.S. GEOLOGICAL SURVEY, 1956 MAP SHOWING BARIUM, SILVER, AND ARSENIC STREAM-SEDIMENT Background information to this folio is published as U. S. Geological GEOCHEMICAL ANOMALIES, AMBLER RIVER QUADRANGLE, ALASKA

OPEN-FILE REPORT 78-120G

EXPLANATION OF ANOMALY SYMBOLS

L 20 30 50 70 100 150 200 300 500 700 1000 1500 2000 3000 5000

SILWER (SPEC.)

L 05 07 10 15 2 3 5 7 10 15 Ag PPM

Mean and standard deviation were not determined because too many samples lie below measurable limits. Anomalous values are arbitrarily chosen.

No values of .5 ppm Ag were reported for samples from 1976. Silver values above measurable limits are significantly more abundant in Garland and Pessel (1975) data.

Only one sample, 76Ek620, map no. 448, contained arsenic above detectable limits.

L-LOWER LIMIT OF ANALYTICAL METHOD

EXPLANATION FOR GENERALIZED GEOLOGIC MAP

Qu QUATERNARY

MzPzpw | MESOZOIC OR PALEOZOIC

uqm }PALEOZOIC AND OLDER (?)

META-IGNEOUS ROCKS

Kgr } CRETACEOUS

Ju } JURASSIC

fs MESOZOIC AND (OR) PALEOZOIC

mi)

Pzi

METASEDIMENTARY ROCKS

OF UNCERTAIN AGE

DESCRIPTION OF MAP UNITS

SURFICIAL DEPOSITS

SEDIMENTARY AND METASEDIMENTARY ROCKS

METASEDIMENTARY ROCKS OF UNCERTAIN AGE

IGNEOUS AND META-IGNEOUS ROCKS

M LISBURNE GROUP AND UPPER PART OF ENDICOTT GROUP (MISSISSIPPIAN)—INCLUDES KAYAK SHALE AND

CHLORITIC QUARTZITE AND SCHIST (PALEOZOIC)-LOCALLY INCLUDES FELDSPATHIC ORTHOGNEISS

Qu UNCONSOLIDATED SURFICIAL DEPOSITS (QUATERNARY)

Kc IGNEOUS PEBBLE -COBBLE CONGLOMERATE (CRETACEOUS)

Pzm LIMESTONE AND MARBLE (DEVONIAN AND OLDER)

Kgr META-GRANITIC PLUTONIC ROCKS (CRETACEOUS)

LITHOLOGIC CONTACT; dashed where uncertain

THRUST FAULT; dotted where conceoled

Survey Circular 793, available free of charge from the U. S. Geological

Survey, Reston, Va. 22092.

Ju ULTRAMAFIC ROCKS AND SERPENTINITE (JURASSIC)

MzPzpw PHYLLITE AND MAFIC VOLCANIC WACKE (MESOZOIC OR PALEOZOIC)

uqm GRAY PHYLLITE AND QUARTZ-MICA SCHIST (PALEOZOIC AND OLDER (?))

mi BASALT, DIABASE, AND GREENSTONE (MESOZOIC AND/OR PALEOZOIC)

fs | FELSIC SCHIST (MESOZOIC AND/OR PALEOZOIC) MAY BE, IN PART, VOLCANIC

Kq QUARTZ CONGLOMERATE, SANDSTONE, AND MUDSTONE (CRETACEOUS)

De LOWER PART OF ENDICOTT GROUP (DEVONIAN)-MAINLY SLATE AND SANDSTONE

Db DARK CALCAREOUS SCHIST, LIMESTONE, AND SILICEOUS PHYLLITE (DEVONIAN)

SEDIMENTARY AND

METASEDIMENTARY ROCKS

Unconformity

CRETACEOUS

CORRELATION OF MAP UNITS SURFICIAL DEPOSITS

BARIUM (SPEC.)

FOLIO OF THE AMBLER RIVER QUADRANGLE, ALASKA

ELLERSIECK - BARIUM, SILVER, AND ARSENIC GEOCHEMICAL ANOMALIES

Barium was analyzed by the emission spectrographic method. Several barium values are in the 5,000 ppm range, above the measurable limits of this method. The threshold value for an anomaly is two standard deviations above the mean. Values of 2,000 ppm and above, 2.4 percent of the samples, are considered anomalous.

Barium is primarily associated with black phyllites of map units Db and Pzbs. Barite veins have been found in map unit Pzbs (Mayfield and Grybeck, 1978). The greatest concentration of these anomalies and the highest barium values are in the upper Amakomanak Creek area, associated with anomalies of zinc, molybdenum, vanadium, iron, lead, and copper.

There are also barium anomalies on the western side of the Jade Mountains, associated with anomalies of copper, zinc, chromium, and lanthanum.

There are a few barium anomalies associated with the large granitic plutons. Barium and silver are the only anomalous elements clearly related to the Redstone pluton.

SILVER

Silver was analyzed by the semiquantitative emission spectrographic method, which has a lower measurable limit of 0.5 ppm. None of the samples from 1976 has a reported silver value of 0.5 or 0.7 ppm, although eight of these samples have reported silver values of 1 ppm or above. One ppm may be an effective lower limit for this data set. Because so many samples (90.9%) have undetectable amounts of silver, no mean value was calculated. Silver values of one ppm or above, 4 percent of the samples, are considered to be anomalous.

Silver anomalies are abundant in the eastern schist belt. However, it should be noted that the boundaries of this area roughly coincide with those of a single data set (Garland and others, 1973), so there is a small possibility that there is a systematic bias to the data. This area also has many anomalous values of copper, lead, zinc, cobalt, nickel, yttrium, and lanthanum.

Three silver anomalies on the northeastern side of the Jade Mountains include the highest concentration reported, 15 ppm.

The three large granitic plutons have surrounding silver anomalies. Near the Kaluich and Shishakshinovik plutons, silver is associated with anomalous values of several other elements; near the Redstone pluton, with

Silver anomalies are also present near the black phyllites of map units Db and Pzbs, especially near anomalies of other elements.

ARSENIC

The lower measurable limit of arsenic by emission spectrography is 200 ppm. Only one sample, 76EK620, map number 448 (Ellersieck, 1978a) contained a measurable amount of arsenic. The sample is red spongy foam and black sulfurous mud, downstream from a spring emerging from black phyllite with sulfate bloom, in map unit Db. This sample also contained anomalously high iron and vanadium, but unusually low concentrations of most other elements.

REFERENCES

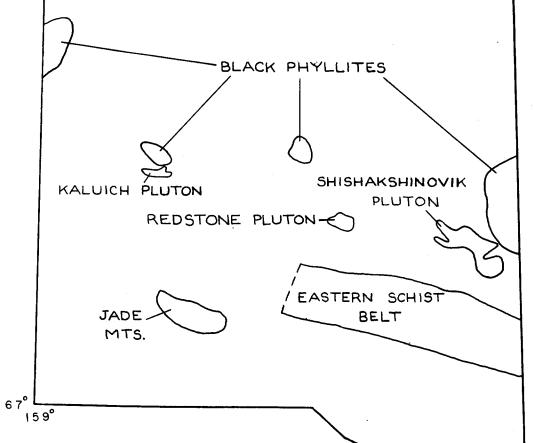
Ellersieck, Inyo, 1978a, Map showing stream-sediment geochemical sample locations, Ambler River quadrangle, Alaska: U. S. Geological Survey Open-File Report 78-120 B, scale 1:250,000, 1 sheet.

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Mayfield, C. F., and Grybeck, Donald, 1978, Mineral occurrences and resources map of the Ambler River quadrangle, Alaska: U. S. Geological Survey Open-File Report 78-120 I, scale 1:250,000, 1 sheet.

AREAS MENTIONED IN TEXT



UNDIFFERENTIATED METAMORPHIC ROCKS (PALEOZOIC)-INCLUDES MARBLE, QUARTZITE, CALC-SCHIST, AND LESSER QUARTZ-MICA SCHIST PZI INTERMEDIATE META-IGNEOUS ROCKS (MESOZOIC AND/OR PALEOZOIC) MAY BE PLUTONIC AND (OR) VOLCANIC, MOSTLY GRANODIORITE OR QUARTZ DIORITE IN COMPOSITION

Generalized geologic map compiled by C. F. MAYFIELD